



Lean Implementation

A Three-Pronged Attack

David M. Riel

The first lines of A.A. Milne's classic, *Winnie the Pooh*, read: "Here is Edward Bear, coming downstairs now, bump, bump, bump, on the back of his head, behind Christopher Robin. It is, as far as he knows the only way, but sometimes he feels that there is another way, if only he could stop bumping for a moment and think of it."

That classic line sums up what the DoD acquisition leadership is asking us to do. Our military systems "will cost" what they historically have unless we take the time to "stop bumping for a moment and think of it." Dep. Sec. Ashton Carter, Ph.D., and John Mueller, DAU professor of program management, in their *Defense AT&L* article, "Should Cost Management: Why? How?" (Sept-Oct 2011) rightfully state that program managers should "call in the assistance of Lean Six Sigma experts to assess your processes and trim the fat. Encourage your contractors to similarly self-evaluate and jointly look at inefficiencies in processes you engage in together." In addition, DAU professors S.L. "Dusty" Schilling, Gordon Hagewood, Harry Snodgrass, and Peter Czech wrote in their *Defense AT&L* article, "Manufacturing Affordability" (Sept-Oct 2011): "the most fundamental truth is that early and persistent

Riel is a professor of Acquisition Management at DAU's Midwest region and has Level III certifications in PM and PQM. In his 20-year Air Force career, he has worked on a variety of programs, including the F-22 and Global Hawk. He also spent several years as senior manager of manufacturing and continuous improvement for a defense contractor.

planning during design is critical to enabling manufacturing affordability during production.” That also is absolutely true.

Nevertheless, if you are managing a program that is post-CDR, there are still positive steps you can take and/or encourage your contractor to take to achieve “should cost” goals. Employing lean is one of those tools. Inopportunely, most PMs I have talked with think of lean only in a tactical sense: value-stream map a process, look for the non-value added, and “trim the fat.” While this approach may grant some short-term gains, long-term success of lean requires a three-pronged attack—adding cultural and strategic to tactical.

Cultural Initiatives

Early on as senior manager of manufacturing and continuous improvement with an aircraft refurbishment division of a defense contractor, it became apparent that if we were to attain an attitude of continuous improvement—faster, better, cheaper—we needed to create a culture that would allow lean to thrive. Every set of skilled mechanic’s hands came with a free brain, and we needed to tap that resource. The first step was to ensure that our touch labor felt valued and to foster in them a sense of ownership for each aircraft we needed to get back to the warfighter. By reviewing the enterprise resource planning (ERP) system, we noted that the last aircraft to deliver had over 400 touch-labor personnel charged to it. From that point, we created “core aircraft teams,” allowing the same team of touch labor to stay with their aircraft as much as and for as long as practical. Recognizing that people want to be part of something important, we replaced our company-oriented banners, reading “Growth through Productivity,” with customer-oriented ones reading “Delivering War-Winning Capability Back to the Warfighter!” What are the companies you are teaming with emphasizing?

Frankly, when we reviewed our employee survey data, “valuing people” was among the lowest-ranked categories. So we also made a huge push in our reward and recognition program. For reward systems to be effective, the more immediate the recognition, the better. We used value stream mapping to reduce our “on the spot” recognition program from a 2-week process to about 30 minutes. We also asked our supervisors to reserve the center of their new production boards to recognize their top employees—those that saved time and/or money through the quality of their work. We made it a priority to visit our employees on their birthday and work anniversary dates. In essence, we started treating our employees like we were lucky to have them instead of like they were fortunate to work for us. Whenever possible, we got our customer involved in our recognition programs. While employees were pleased to receive recognition from company leadership, the recognition gained meaning when presented by our customer. Our customer was also willing to give a tour of the finished aircraft prior to it flying away. Suddenly, those “parts” being fabricated became an aircraft with a mission in the global war on terrorism. One manufacturing employee with over 20 years working for our company told me this was the first time he had gotten to con-

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nect what he did in the back shop with the final product. Time and money well spent.

The results spoke for themselves: Turnover rates, an important indicator of employee satisfaction, declined over a 3-year period, from greater than 20 percent to 5.1 percent. Profits increased, as well. Not all of this resulted from our culture efforts, but they were an important, foundational piece of the puzzle. The next piece was our strategic initiatives.

Strategic Initiatives

Strategic initiatives are those lean activities that every company should be doing—such as 6S, point-of-use and visual factory. They are not company specific. As most lean practitioners will acknowledge, 6S—safety, sort, set, shine, standardize, sustain—is foundational in establishing a lean enterprise. I joined the facility just 9 months after one of our USAF customers described our cluttered hangars as “Sanford and Sons.” (I still can’t get that theme music out of my head!) Not surprisingly, 6S became a focus shortly after, initiated with monthly competitions at the hangar-level. We noted some nice improvement, but the initiative lacked ownership, since the hangars didn’t really belong to anyone. So we shifted the competition to the aircraft level, and identified core teams from each aircraft. It’s human nature to enjoy good competition, and we were reaping the benefits. The improvements were significant. Within 3 years of that original e-mail, that same USAF customer was sending others our way to view our facility’s gains. How well is your contractor doing with 6S?

At the same time that we were getting our workplaces organized, we recognized that the more we could provide the mechanics what he/she needed as close to their work as possible, the faster the job could be done. In lean terms, we were reducing the waste of motion. How would you like if during surgery, your surgeon had to go to the other side of the hospital to get her scalpel, and then hike across to another part of the hospital for the sutures? Not acceptable, right? Establishing point-of-use for a factory is the same concept. Instead of having consumables and expendables centrally located in the hangar, we made them available plane-side in smaller, portable

stations. Less walking meant more time with the “patient”—our customers’ aircraft.

Another important initiative was making the facilities and work more “visual” to everyone. We developed and deployed production boards at every aircraft. This visibility provided the aircraft supervisor and division leadership with key metrics—major milestones, 2-week schedule, earned value management (EVM) data, material shortage tracker—used to assess the health of the aircraft. We also included a countdown clock, which counted down the seconds until the next milestone had to be accomplished to stay on schedule. When that clock hit 0:00, we knew we were behind. Perhaps the most useful item on those boards was the action item list. That list included what actions needed to be done in order to hit that milestone and who was responsible for making it happen. Division leadership visited each aircraft weekly, where the aircraft supervisor used the production board to present status.

Tactical Initiatives

With cultural and strategic initiatives gaining momentum, we turned our attention toward the tactical; those projects that are program-specific. One customer in particular was anxious to get their assets back since they were scheduled to go to war within a couple of months of our delivery. They joined us for value-stream mapping several of the processes we worked together—e.g., final aircraft inspection (“shakes”); rack and console installation; and aircraft paint. Through teaming and making aircraft delivery the number one priority, we were able to significantly reduce the “shakes” process from over 60 days to 15 days on average. The racks/console installation process was cut in half from 45 days to 22 days. Aircraft paint re-

duced by 2 days with over 150 labor hours saved. As you can imagine, teaming with our USAF customer was essential in making these gains. Also, a motivated, stable workforce and 6S in place were critical in creating and sustaining these gains. How have you partnered with your contractor to create win-win situations?

Since this article focuses on our success, it may give the impression that everything went smoothly. Not! Not even close! Change is hard. Even with strong upper management support, for every two steps forward, we took a step back. Some initiatives didn’t work, so we ended them. Some worked better than we ever imagined they would. To quote Thomas Edison, “Opportunity is often missed because it’s dressed in overalls and looks like work.” Pursuing these initiatives is definitely a “roll-up your sleeves” task. Persistence and dedication to the continuous improvement process was required and key. For those Steven Covey fans out there, this is definitely “quadrant 2” stuff—important, but not urgent. Your contractor partners and you are likely busy with quadrant 1 (important and urgent) or even quadrant 3 (urgent, but not important). To be successful, the team—contractor and government—must carve out the time and energy to pursue these important yet non-urgent activities.

As you pursue “should cost” initiatives, be sure to see lean as a three-pronged attack. Although tactical lean activities will identify key savings areas, fruition and sustainment of those savings may very well depend on cultural and strategic enterprises. &

The author can be reached at david.riel@dau.mil.

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